

10/535312

EXPRESS MAIL NO. EV335397268US

JC20 Rec'd PCT/PTO 17 MAY 2005

<110> HANMI PHARM. IND. CO., LTD.  
 <120> Method for the mass production of immunoglobulin constant region  
 5 <150> KR10-2003-0080299  
 <151> 2003-11-13  
 <160> 46  
 10 <170> KopatentIn 1.71  
 <210> 1  
 <211> 37  
 <212> DNA  
 15 <213> Artificial Sequence  
 <220>  
 <223> primer  
 20  
 <400> 1  
 cccaagcttg cctccaccaa gggcccatcg gtcttcc 37  
 25 <210> 2  
 <211> 33  
 <212> DNA  
 <213> Artificial Sequence  
 30 <220>  
 <223> primer  
 <400> 2  
 35 gggggatcct catttaccg gagacaggga gag 33  
 <210> 3  
 <211> 35  
 40 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> primer  
 45  
 <400> 3  
 cccaagcttg acatccagtt gacccagtct ccatc 35  
 50

	<210>	4	
	<211>	36	
	<212>	DNA	
	<213>	Artificial Sequence	
5	<220>		
	<223>	primer	
10	<400>	4	
	gggggatcct caacactctc ccctgttgaa gctctt		36
15	<210>	5	
	<211>	990	
	<212>	DNA	
	<213>	Homo sapiens	
20	<400>	5	
	gcctccacca agggcccac cgtcttcccc ctggcacccct cctccaagag cacctctggg		60
	ggcacagcgg ccctgggctg cctgggtcaag gactacttcc ccgaaccggt gacgggtgtcg		120
25	tggaactcag gcgccctgac cagcggcgctg cacaccttcc cggtgttcct acagtectca		180
	ggactctact ccctcagcag cgtgggtgacc gtgccctcca gcagcttggg caccagacc		240
	tacatctgca acgtgaatca caagcccagc aacaccaagg tggacaagaa agttgagccc		300
30	aaatcttgat acaaaactca cacatgccca ccgtgcccag cacctgaact cctgggggga		360
	ccgtcagtct tctcttccc ccaaaaccc aaggacaccc tcatgatctc ccggaccct		420
35	gaggtcacat gcgtgggtgt ggacgtgagc cacgaagacc ctgaggtaa gttcaactgg		480
	tacgtggacg gcgtggaggt gcataatgcc aagacaaagc cgcgggagga gcagtacaac		540
	agcacgtacc gtgtggtcag cgtctcacc gtctgcacc aggactggct gaatggcaag		600
40	gagtacaagt gcaaggtctc caacaaagcc ctcccagccc ccatcgagaa aaccatctcc		660
	aaagccaaag ggcagccccg agagccacag gtgtacaccc tgccccatc ccgggatgag		720
45	ctgaccaaga accaggctcag cctgacctgc ctgggtcaaag gcttctatcc cagcgacatc		780
	gccgtggagt gggagagcaa tgggcagccg gagaacaact acaagaccac gcctcccgtg		840
	ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcagggtg		900
50	cagcagggga acgtcttctc atgtccgtg atgcatgagg ctctgcacaa ccactacacg		960

	cagaagagcc tctccctgtc tccgggtaaa	990
5	<210> 6 <211> 324 <212> DNA <213> Homo sapiens	
10	<400> 6 cgaactgtgg ctgcaccatc tgtcttcac ttcccgccat ctgatgagca gttgaaatct	60
	ggaactgcct ctgttgtgtg cctgctgaat aacttctatc ccagagaggc caaagtacag	120
15	tggaaggtgg ataacgccct ccaatcgggt aactcccagg agagtgtcac agagcaggac	180
	agcaaggaca gcacctacag cctcagcagc acctgacgc tgagcaaagc agactacgag	240
	aaacacaaag tctacgcctg cgaagtcacc catcagggcc tgagctcgcc cgtcacaaag	300
20	agcttcaaca ggggagagtg ttag	324
25	<210> 7 <211> 30 <212> DNA <213> Artificial Sequence	
30	<220> <223> primer	
35	<400> 7 cggcctccac caagggccca tcggtcttcc	30
40	<210> 8 <211> 33 <212> DNA <213> Artificial Sequence	
	<220> <223> primer	
45	<400> 8 cgccgtgccc agcacctgaa ctctggggg gac	33
50	<210> 9	

	<211>	33	
	<212>	DNA	
	<213>	Artificial Sequence	
5	<220>		
	<223>	primer	
10	<400>	9	
		cgtcatgccc agcacctgaa ctctggggg gac	33
15	<210>	10	
	<211>	35	
	<212>	DNA	
	<213>	Artificial Sequence	
20	<220>		
	<223>	primer	
25	<400>	10	
		cgtcatgccc agcacctgag ttctggggg gacca	35
30	<210>	11	
	<211>	26	
	<212>	DNA	
	<213>	Artificial Sequence	
35	<220>		
	<223>	primer	
35	<400>	11	
		cggcacctga actcctgggg ggaccg	26
40	<210>	12	
	<211>	69	
	<212>	DNA	
	<213>	Escherichia coli	
45	<400>	12	
		atgaaaaaga caatgcatt tctcttgca tctatgttcg tttttctat tgctacaaat	60
		gcccaggcg	69
50	<210>	13	

	<211>	45	
	<212>	DNA	
	<213>	Artificial Sequence	
5	<220>		
	<223>	primer	
10	<400>	13	
	tctattgcta caaatgccca ggccttccca accattccct tatcc		45
15	<210>	14	
	<211>	45	
	<212>	DNA	
	<213>	Artificial Sequence	
20	<220>		
	<223>	primer	
25	<400>	14	
	agataacgat gtttacgggt ccggaagggt tggtaaggga atagg		45
30	<210>	15	
	<211>	984	
	<212>	DNA	
	<213>	Homo sapiens	
35	<400>	15	
	gcttcacca agggcccatc cgtcttcccc ctggcgcctt gctccaggag cacctccgag		60
	agcacagccg ccctgggctg cctggtaag gactacttcc ccgaaccggt gacgggtgtcg		120
	tggaactcag gcgccctgac cagcggcgtg cacaccttcc cggtgtcct acagtcctca		180
	ggactctact cctcagcag cgtggtgacc gtgccctcca gcagcttggg cacgaagacc		240
40	tacacctgca acgtagatca caagcccagc aacaccaagg tggacaagag agttgagtc		300
	aaatatggtc ccccatgccc atcatgccc gcacctgagt tctgggggg accatcagtc		360
45	ttctgttcc ccccaaaacc caaggacact ctcatgatct cccggacccc tgaggtcacg		420
	tgcgtgggtg tggacgtgag ccaggaagac cccgaggtec agttcaactg gtacgtggat		480
	ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagttcaa cagcacgtac		540
50	cgtgtgggtc gcgtcctcac cgctctgcac caggactggc tgaacggcaa ggagtacaag		600

	tgcaaggtct ccaacaaagg cctcccgctc tccatcgaga aaaccatctc caaagccaaa	660
	gggcagcccc gagagccaca ggtgtacacc ctgccccat cccaggagga gatgaccaag	720
5	aaccaggtca gcctgacctg cctgggtcaaa ggcttctacc ccagcgacat cgccgtggag	780
	tgggagagca atgggcagcc ggagaacaac tacaagacca cgctcccggt gctggactcc	840
10	gacggctcct tcttctcta cagcaggcta accgtggaca agagcagggtg gcaggagggg	900
	aatgtcttct catgctccgt gatgcatgag gctctgcaca accactacac acagaagagc	960
15	ctctccctgt ctctgggtaa atga	984
	<210> 16	
	<211> 35	
	<212> DNA	
20	<213> Artificial Sequence	
	<220>	
	<223> primer	
25	<400> 16	
	cgctcatgcc agcacctgag ttcttggggg gacca	35
30	<210> 17	
	<211> 42	
	<212> DNA	
	<213> Artificial Sequence	
35	<220>	
	<223> primer	
40	<400> 17	
	gggggatcct catttaccga gagacaggga gaggtctctc tg	42
45	<210> 18	
	<211> 29	
	<212> DNA	
	<213> Artificial Sequence	
	<220>	
50	<223> primer	

	<400>	18	
	cggcacctga gttcctgggg ggaccatca		29
5	<210>	19	
	<211>	30	
	<212>	DNA	
	<213>	Artificial Sequence	
10	<220>		
	<223>	primer	
15	<400>	19	
	cggcttcac caagggccca tccgtcttc		30
20	<210>	20	
	<211>	21	
	<212>	DNA	
	<213>	Artificial Sequence	
	<220>		
25	<223>	primer	
30	<400>	20	
	cgcgaactgt ggctgcacca t		21
	<210>	21	
	<211>	220	
	<212>	PRT	
35	<213>	Homo sapiens	
	<400>	21	
	Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe		
	1 5 10 15		
40	Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val		
	20 25 30		
	Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe		
45	35 40 45		
	Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro		
	50 55 60		
50	Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr		

	65	70	75	80
	Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val	85	90	95
5	Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala	100	105	110
10	Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg	115	120	125
	Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly	130	135	140
15	Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro	145	150	155
	Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser	165	170	175
20	Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln	180	185	190
25	Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His	195	200	205
	Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys	210	215	220
30	<210> 22			
	<211> 220			
	<212> PRT			
	<213> Homo sapiens			
35	<400> 22			
	Ser Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe	1	5	10
40	Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val	20	25	30
	Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe	35	40	45
45	Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro	50	55	60
50	Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr	65	70	75
				80



	Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val	
	85	90 95
5	Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala	
	100	105 110
	Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg	
	115	120 125
10	Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly	
	130	135 140
	Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro	
15	145	150 155 160
	Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser	
	165	170 175
20	Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln	
	180	185 190
	Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His	
	195	200 205
25	Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys	
	210	215 220
30	<210> 23	
	<211> 220	
	<212> PRT	
	<213> Homo sapiens	
35	<400> 23	
	Ser Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe	
	1 5 10 15	
	Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val	
40	20 25 30	
	Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe	
	35 40 45	
45	Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro	
	50 55 60	
	Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr	
	65 70 75 80	
50		

Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val  
                             85                            90                            95

5 Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala  
                             100                            105                            110

Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg  
                             115                            120                            125

10 Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly  
                             130                            135                            140

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro  
 15 145                            150                            155                            160

Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser  
                             165                            170                            175

Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln  
 20 180                            185                            190

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His  
                             195                            200                            205

25 Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys  
                             210                            215                            220

30 <210> 24  
 <211> 327  
 <212> PRT  
 <213> Homo sapiens

35 <400> 24  
 Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg  
                             1                            5                            10                            15

Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr  
                             20                            25                            30

40 Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser  
                             35                            40                            45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser  
 45 50                            55                            60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr  
                             65                            70                            75                            80

50 Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys

	85	90	95
	Arg Val Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro		
	100	105	110
5	Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys		
	115	120	125
10	Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val		
	130	135	140
	Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp		
	145	150	155 160
15	Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe		
	165	170	175
	Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp		
	180	185	190
20	Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu		
	195	200	205
	Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg		
25	210	215	220
	Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys		
	225	230	235 240
30	Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp		
	245	250	255
	Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys		
	260	265	270
35	Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser		
	275	280	285
	Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser		
40	290	295	300
	Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser		
	305	310	315 320
45	Leu Ser Leu Ser Leu Gly Lys		
	325		
	<210> 25		
50	<211> 330		

<212> PRT  
<213> Homo sapiens

<400> 25

5 Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys  
1 5 10 15

Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr  
20 25 30

10 Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser  
35 40 45

15 Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser  
50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr  
65 70 75 80

20 Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys  
85 90 95

Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys  
100 105 110

25 Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro  
115 120 125

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys  
30 130 135 140

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp  
145 150 155 160

35 Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu  
165 170 175

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu  
180 185 190

40 His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn  
195 200 205

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly  
45 210 215 220

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu  
225 230 235 240

50 Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr

	245	250	255
	Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn		
	260	265	270
5	Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe		
	275	280	285
10	Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn		
	290	295	300
	Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr		
	305	310	315
15	Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys		
	325	330	
	<210> 26		
20	<211> 15		
	<212> PRT		
	<213> Homo sapiens		
	<400> 26		
25	Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro		
	1 5 10 15		
	<210> 27		
30	<211> 217		
	<212> PRT		
	<213> Homo sapiens		
	<400> 27		
35	Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys		
	1 5 10 15		
	Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val		
	20 25 30		
40	Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr		
	35 40 45		
	Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu		
45	50 55 60		
	Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His		
	65 70 75 80		
50	Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys		

	85	90	95
	Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln		
	100	105	110
5	Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu		
	115	120	125
	Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro		
10	130	135	140
	Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn		
	145	150	155
	Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu		
15	165	170	175
	Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val		
	180	185	190
20	Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln		
	195	200	205
	Lys Ser Leu Ser Leu Ser Pro Gly Lys		
25	210	215	
	<210> 28		
	<211> 12		
30	<212> PRT		
	<213> Homo sapiens		
	<400> 28		
	Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro		
35	1	5	10
	<210> 29		
	<211> 220		
40	<212> PRT		
	<213> Homo sapiens		
	<400> 29		
	Ser Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe		
45	1	5	10
	Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val		
	20	25	30
50	Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe		

	35	40	45
	Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro		
	50	55	60
5	Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr		
	65	70	75 80
10	Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val		
	85	90	95
	Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala		
	100	105	110
15	Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln		
	115	120	125
	Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly		
	130	135	140
20	Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro		
	145	150	155 160
	Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser		
25	165	170	175
	Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu		
	180	185	190
30	Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His		
	195	200	205
	Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys		
35	210	215	220
	<210> 30		
	<211> 217		
	<212> PRT		
40	<213> Homo sapiens		
	<400> 30		
	Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys		
	1	5	10 15
45	Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val		
	20	25	30
	Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr		
50	35	40	45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu  
 50 55 60  
 5 Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His  
 65 70 75 80  
 Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys  
 85 90 95  
 10 Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln  
 100 105 110  
 Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met  
 115 120 125  
 15 Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro  
 130 135 140  
 Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn  
 145 150 155 160  
 Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu  
 165 170 175  
 25 Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val  
 180 185 190  
 Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln  
 195 200 205  
 30 Lys Ser Leu Ser Leu Ser Leu Gly Lys  
 210 215

35 <210> 31  
 <211> 29  
 <212> DNA  
 <213> primer  
 40 <400> 31  
 cgccgtgccc agcacctccg gtggcgga

45 <210> 32  
 <211> 33  
 <212> DNA  
 <213> primer  
 50 <400> 32



gggggacccct catttaccgc gagacaggga gag

33

5 <210> 33  
<211> 12  
<212> PRT  
<213> Homo sapiens

10 <400> 33  
Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro  
1 5 10

15 <210> 34  
<211> 107  
<212> PRT  
<213> Homo sapiens

20 <400> 34  
Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu  
1 5 10 15

Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe  
20 25 30

25 Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln  
35 40 45

30 Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser  
50 55 60

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu  
65 70 75 80

35 Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser  
85 90 95

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys  
100 105

40

<210> 35  
<211> 219  
<212> PRT  
45 <213> Homo sapiens

<400> 35  
Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro  
1 5 10 15

50

Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr  
 20 25 30  
 5 Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Asn  
 35 40 45  
 Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg  
 50 55 60  
 10 Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu Thr Val  
 65 70 75 80  
 Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser  
 85 90 95  
 15 Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys  
 100 105 110  
 Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu  
 115 120 125  
 20 Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe  
 130 135 140  
 25 Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu  
 145 150 155 160  
 Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe  
 165 170 175  
 30 Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly  
 180 185 190  
 Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr  
 195 200 205  
 35 Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys  
 210 215  
 40  
 <210> 36  
 <211> 23  
 <212> PRT  
 <213> Escherichia coli  
 45  
 <400> 36  
 Met Lys Lys Asn Ile Ala Phe Leu Leu Ala Ser Met Phe Val Phe Ser  
 1 5 10 15  
 50 Ile Ala Thr Asn Ala Tyr Ala

20

5 <210> 37  
<211> 23  
<212> PRT  
<213> Escherichia coli

10 <400> 37  
Met Lys Lys Thr Ile Ala Phe Leu Leu Ala Ser Met Phe Val Phe Ser  
1 5 10 15

Ile Ala Thr Asn Ala Gln Ala  
20  
15

<210> 38  
<211> 23  
<212> PRT  
20 <213> Escherichia coli

<400> 38  
Met Lys Lys Thr Ile Ala Phe Leu Leu Ala Ser Met Phe Val Phe Ser  
1 5 10 15

25 Ile Ala Thr Val Ala Gln Ala  
20

30 <210> 39  
<211> 23  
<212> PRT  
<213> Escherichia coli

35 <400> 39  
Met Lys Lys Lys Thr Ala Phe Leu Leu Ala Ser Met Phe Val Phe Ser  
1 5 10 15

40 Ile Ala Thr Asn Ala Gln Ala  
20

<210> 40  
<211> 23  
45 <212> PRT  
<213> Escherichia coli

<400> 40  
Met Lys Lys Ser Ile Ala Phe Leu Leu Ala Ser Met Phe Val Phe Ser  
50 1 5 10 15

Ile Ala Thr Asn Ala Gln Ala  
20

5

<210> 41  
<211> 23  
<212> PRT  
<213> Escherichia coli

10

<400> 41  
Met Lys Lys Ser Ile Ala Phe Leu Leu Ala Ser Met Phe Val Phe Ser  
1 5 10 15

15

Ile Ala Thr Val Ala Gln Ala  
20

20

<210> 42  
<211> 23  
<212> PRT  
<213> Escherichia coli

25

<400> 42  
Met Lys Lys Thr Ile Ala Phe Leu Leu Ala Ser Gly Phe Val Phe Ser  
1 5 10 15

Ile Ala Thr Val Ala Gln Ala  
20

30

<210> 43  
<211> 23  
<212> PRT  
<213> Escherichia coli

35

<400> 43  
Met Lys Lys Thr Ile Ala Phe Leu Leu Ala Ser Leu Phe Val Phe Ser  
1 5 10 15

40

Ile Ala Thr Val Ala Gln Ala  
20

45

<210> 44  
<211> 23  
<212> PRT  
<213> Escherichia coli

50

<400> 44

[illegible]